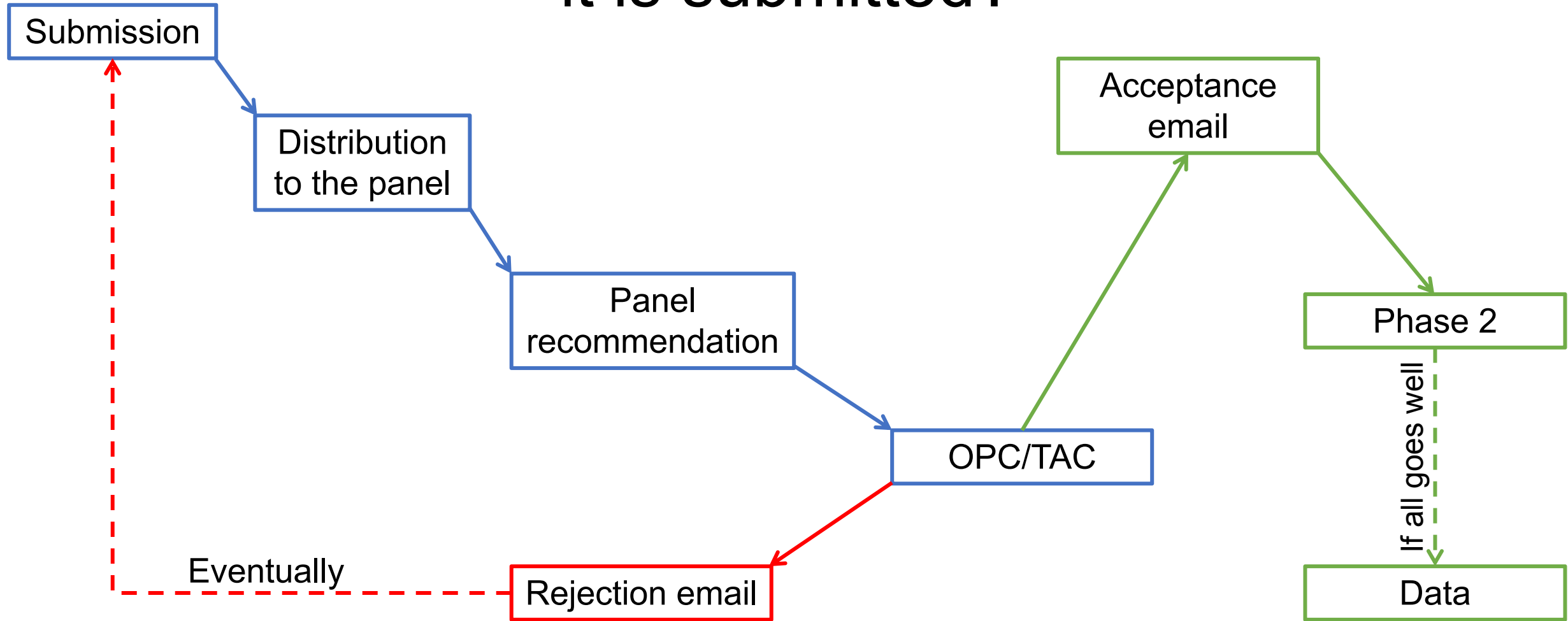


What happens to my proposal once
it is submitted?

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Submission --> Panel

- Proposals are distributed to the different panels best matching panel expertise and submission category + proposal keywords
- Panel members have 1 week to give feedback on possible category mismatches and conflicts of interest
- Panel members have about 1 month time to review (pre-grade and provide preliminary feedback) each assigned proposal

Panels composition

- Panels are typically composed by 6 to 10 experts chosen by the observatory from the community
- Panelists' work is voluntary (i.e. service to the community) and unpaid
- Each panel has a chair and a vice-chair
- Each panel is supported by someone (typically a postdoc) internal to the observatory who (1) is in charge of part of the organisational work, (2) is familiar with the procedures to be followed, and (3) provides the link with the instrumentation people at the observatory in case the panel has instrumentation-related questions
- Typically, each panelist reviews 30-70 proposals

Panels composition: Distributed Peer Review

- Most observatories (e.g. ESO, STScI, HST mid-Cycles, Opticon, TNG) assign part of the received proposals (typically those requesting short amounts of time) to a pool of external reviewers chosen by the observatory from the community
- This is done to ease the load on the panels
- The external reviewers review 2-10 proposals
- STScI: A fair amount of short proposals are reviewed by external reviewers and the final selection is based on their grades (following some normalisation). The comments of each reviewer are placed one after the other, without intervention from the TAC.
- ESO and TNG: By submitting a proposal, the PIs (and a few Cols) agree both to act as reviewers and to have their proposal reviewed by PIs/Cols of other proposals.

Categories

The panel is composed of scientists who might or might not be familiar with the topic of your proposal !!!

HST & JWST:

- Solar system astronomy
- Exoplanets and exoplanet formation
- Stellar physics and stellar types
- Stellar populations and the interstellar medium
- Galaxies
- Intergalactic medium and circumgalactic medium
- Supermassive black holes and active galaxies
- Large scale structures of the universe

ESO:

- A: cosmology and the intergalactic medium
- B: galaxies
- C: interstellar medium, star formation and planetary systems
- D: stellar evolution

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A - COSMOLOGY AND THE INTERGALACTIC MEDIUM

- A1 Galaxies in their environment (e.g. galaxies in groups and clusters, merging galaxies, galaxy interactions, ram-pressure stripping of galaxies in groups and clusters)
- A2 Global properties of galaxy groups, clusters and proto-structures including the intracluster medium
- A3 Dark matter and gravitational lensing
- A4 Intergalactic medium, circumgalactic medium and intervening absorption systems (e.g. Lyman alpha clouds, damped Lyman alpha systems and associated galaxies)
- A5 Discovery surveys and the statistical study of galaxy properties (e.g. spectroscopic and redshift surveys, identifications, large scale structure, galaxy luminosity function and mass function, surveys for active galactic nuclei)
- A6 Reionization and cosmic dawn (probes of reionization, galaxies in the epoch of reionization)
- A7 Cosmological parameters (e.g. distance scale, dark energy, fundamental physics).

C - INTERSTELLAR MEDIUM, STAR FORMATION and PLANETARY SYSTEMS

- C1 Gas and dust, giant molecular clouds, cool and hot gas, diffuse and translucent clouds
- C2 Chemical processes in the interstellar medium
- C3 Star forming regions, globules, protostars, HII regions
- C4 Pre-main-sequence stars (massive PMS stars, Herbig Ae/Be stars and T Tauri stars)
- C5 Outflows, stellar jets, HH objects
- C6 Main-sequence stars with circumstellar matter, early evolution
- C7 Young binaries, brown dwarfs, exosolar planet searches
- C8 Solar system (planets, comets, small bodies)

B - GALAXIES

- B1 The Milky way and local group galaxies
- B2 Resolved and unresolved stellar populations in galaxies beyond the Local Group (e.g. stellar metallicity, star formation histories)
- B3 Galaxy structure, dynamics and kinematics (e.g. bulges, disks, morphology, in/outflows, dark matter inside galaxies, stellar orbits)
- B4 Dwarf galaxies, stellar clusters in galaxies and satellite galaxies
- B5 Galactic centre, galaxy nuclei and supermassive black holes
- B6 Physics of Active Galactic Nuclei
- B7 Interstellar medium and star formation in galaxies (e.g., in/outflows, starburst galaxies, gas-phase metallicity, dust in galaxies)

D - STELLAR EVOLUTION

- D1 Main-sequence stars
- D2 Post-main-sequence stars, giants, supergiants, AGB stars, post-AGB stars
- D3 Pulsating stars and stellar activity
- D4 Mass loss and winds
- D5 Supernovae, pulsars
- D6 Planetary nebulae, nova remnants and supernova remnants
- D7 Pre-white dwarfs and white dwarfs, neutron stars
- D8 Evolved binaries, black-hole candidates, novae, X-ray binaries, CVs
- D9 Gamma-ray and X-ray bursters
- D10 OB associations, open and globular clusters, extragalactic star clusters
- D11 Individual stars in external galaxies, resolved stellar populations
- D12 Distance Scale - stars

Categories

The panel is composed of scientists who might or might not be familiar with the topic of your proposal !!!

C - INTERSTELLAR MEDIUM, STAR FORMATION and PLANETARY SYSTEMS

- | | |
|----|--|
| C1 | Gas and dust, giant molecular clouds, cool and hot gas, diffuse and translucent clouds |
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| C8 | Solar system (planets, comets, small bodies) |

Conflicts of interest

The observatory checks for two conflicts of interest:

- 1) PIs of proposals and panelists from the same institute
- 2) Panelists being proposal PI or CoI

At the time of distributing proposals to the panels, the observatory will try to minimise these 2 conflicts of interest by spreading proposals among different panels of the same category.

However, this is not always possible, which leads to less panel members grading a proposal (not in the case of STScI proposals) and the conflicted panel member(s) having to leave the room during the discussion of the conflicted proposal.

Possibly, this can leave the panel devoid of experts on the topic of a certain proposal, though this problem has significantly decreased with the introduction of the dual anonymous review.

--> Start from the assumption that the panel is NOT expert in your field.

Panels recommendation: before the panel meeting

Each panel member checks for eventual further conflicts of interest and reports them.

Each panel member* reads each assigned proposal and pre-grades it, typically with a number from 1 to 5 (see table below as an example), and provides a short written feedback typically divided into “strengths” and “weaknesses”.

*: in the case of STScI proposals (HST, JWST), the panel chair grades only large proposals

1.0 – outstanding: breakthrough science

1.5 – excellent: definitely above average

2.0 – very good: no significant weaknesses

2.5 – good: minor deficiencies do not detract from strong scientific case

3.0 – fair: good scientific case, but with definite weaknesses

3.5 – rather weak: limited science return prospects

4.0 – weak: little scientific value and/or questionable scientific strategy

4.5 – very weak: deficiencies outweigh strengths

5.0 – unsuitable

Panels recommendation: review topics

Impact within the sub-field

- The scientific merit of the program and its contribution to advancement of knowledge.
- Will the proposed program improve our understanding of the objects, classes of object, or specialist topics under study in the proposal? By how much? How relevant is the proposed work to the immediate sub-field of the proposal?
- The immediate sub-field of the proposal is the niche area of the program, not the whole broad science area of the topical panel to which it was assigned. The evaluation should be based on what is written in the proposal, not on the reviewer's broader knowledge, even if the reviewer is an expert in the sub-field. Though, in most cases, the reviewer will not be an expert in the sub-field of the proposal, and the proposal should have been written accordingly.

Panels recommendation: review topics

Out of field impact:

- The program's impact for astronomy in general.
- Are there implications for other science areas and/or insights into larger-scale questions? Will the proposed program improve our understanding of science areas beyond the immediate sub-field of the proposal? How broad and how significant is this new understanding?
- The proposal does not have to impact all of astronomy, but should ideally impact a number of other sub-fields or provide significant impacts in at least one other sub-field. The out-of-field impacts could be in other areas within the topical science panel of the proposal, or in other topical science areas. This evaluation should be based on what is written in the proposal, not on the reviewer's broader knowledge.

Panels recommendation: review topics

Suitability:

- The necessity for observations with a given telescope/instrument.
- A demonstration that the unique capabilities of the instrument are required to achieve the science goals; how much of an advantage do data of a given instrument offer over other facilities?

Panels recommendation: before the panel meeting

- Each proposal in a panel gets assigned a primary reviewer.
- For STScI proposals, each proposal gets assigned also a secondary reviewer, while for ESO proposals all other panel members are secondary reviewers.
- For STScI proposals, panel members have some proposals where they are primary (pre-grading + feedback), some where they are secondary (pre-grading + feedback), some where they are neither primary nor secondary, but still need to pre-grade and give feedback, some where they just give pre-grades, and some that they do not read at this stage even if not conflicted.
- For ESO, panel members have some proposals where they are primary (pre-grading + feedback) and are secondary (pre-grading + feedback) for all the other proposals in the panel.

Panels recommendation: before the panel meeting

- The observatory gives a deadline by which all pre-grades need to be inserted in the system.
Note that at this time only the grades matter and not the feedbacks.
- To account for possible systematic differences in the grading of different reviewers within a panel, the pre-grades of each reviewer are normalised. This enables to properly compare the pre-grades given by the different reviewers.
- The observatory computes the average pre-grade of each proposal within a panel and makes a list ordered by pre-grade.
- The observatory sets a boundary based on grade and number of proposals in the panel so that a fair amount (e.g. 1/3, half, 2/3, depending on the number of proposals) of proposals are triaged, which means not formally discussed by the panel.
- The non-triaged proposals are then discussed by the panel during the (online) panel meeting.

Panels recommendation: during the panel meeting

- The panel chair prepares the schedule of the discussion: each non-triaged proposal is discussed individually.
- Before the meeting, each panel member can “resurrect” any of the triaged proposal, if a panel member or the observatory ask for it. Typically, “resurrected” triaged proposals “fall even harder”, therefore this possibility is almost never used.
- All pre-grades of the proposals under discussion are deleted and the competition among the non-triaged proposals starts from scratch again.

For each proposal subject to discussion:

- the primary reviewer presents the proposal and gives her/his opinion about it;
- at turns the other panel members give their opinion (the secondary goes first for STScI proposals), followed by a discussion on the proposal, during which the primary reviewer (hopefully) takes notes since what is said during the discussion will constitute the bulk of the feedback to the proposers;
- all panel members independently grade the proposal.
- Each discussed proposal gets a total of about 20 min time in the panel.

Panels recommendation: end of the panel meeting

- To account for possible systematic differences in the grading of different reviewers within a panel, the grades of each reviewer are normalised.
- The observatory computes the average grade of each proposal within a panel and makes a list ordered by grade.
- STScI: each panel has assigned a certain amount of telescope time and all proposals, starting from the best, that fit into the allocated time are then accepted. Extreme example: if the top graded proposal asks for all the time available to the panel, then only this proposal will be accepted (NB: in practice this extreme case cannot happen).
- ESO: the observatory sets a provisional grade boundary above which proposals are likely to be accepted and below which they are likely to be rejected. This uncertainty comes from the fact that ESO panels review proposals for different instruments attached to different telescopes, thus one has to first put together all proposals from all panels asking for time to a certain telescope to finalise the acceptance/rejection list. This is the task of the OPC.

Observing Programmes Committee (OPC)

Telescope Allocation Committee (TAC)

- At the end of each panel meeting, the panel members discuss the large programs belonging to the panel category and the primary takes notes of the comments provided by the panel members. Panel members do not grade the large programs.

The OPC/TAC

- is composed by the panel chairs;
- makes the final selection (approval vs rejection) of the short proposals;
- discusses the large programs following the same procedure followed within each panel.

NB: at ESO, one can also get certain runs accepted/rejected, instead of the entire proposal.

Example acceptance / rejection

Following the OPC/TAC, the accepted proposals go through a feasibility check, and thus a proposal can also be rejected if the observations are deemed unfeasible (e.g. wanting to observe a target not visible from the telescope location).

Typical message from the observatory:

The number of hours/orbits/kseconds requested by proposals in period #### on telescope XXX amounted to #### times the available time. Ranking: This run has been ranked in the (1st, 2nd, 3rd, 4th, 5th) quartile/quintile of all runs at this telescope (####) and in the (1st, 2nd, 3rd, 4th, 5th) quartile/quintile of all non-triaged runs requested in this period (#####).

NB: even 1st quartile/quintile proposals may be rejected if higher graded proposals have taken up all available time. This typically happens when pressure is high.

Example acceptance / rejection

Two HARPS proposals: one of them got accepted in the 1st quartile, while the other one got rejected in the 4th quartile. Which is which?

The authors propose to observe 6 nearby targets [redacted] in edge-on orbits. They already obtained many nights. They here ask for other targets. This is an interesting science case because more statistics are needed on the specific range of masses and radii [redacted] Strengths: + The proposal could bring better statistics for the masses and radii of planets [redacted] Weaknesses: - The scientific case is short and lacking in detail. - Targets selected by variation in [redacted] but are there alternative hypotheses? The degree of confidence of candidate signals needs to be clarified. For some targets, the improvement might be minor.

This proposal seeks to model the internal structure of [redacted] by measuring their mass to 15% using HARPS. Such planets have been proposed to explain the second peak of the evaporation valley. The planets have been identified in a mass-radius diagram. [redacted] data constraining the planetary radii at 2-3% will be used. The status of the planets as [redacted] is debated. If the proposal is successful, the sample of such worlds will be doubled. Strengths: Well-explained science case and clear science goals. Instrument use well justified and expected S/N sufficient to reach the goals. Weaknesses: The proposal looks interesting but risky. If the planets do not fall in the [redacted] triangle, the science goals cannot be achieved. It is not clear how much 2 more measurements will improve the knowledge of such planets and why the targets were selected among others. The interior studies of known [redacted] planets are not discussed. The procedure to constrain the relative positions of the formation location and the protoplanetary disk iceline from the mass fraction of volatiles is unclear.

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4th

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1st

If rejected...

... you can try again, implementing the comments of the panel. However, your proposal will be reviewed next time by a panel composed (mostly) by different persons, who might then find it great or find additional problems.

There is a strong “luck component” involved.

If accepted...

... be prepared, because you'll be requested to quickly fill up the phase 2.

This is where you prepare everything that is needed to carry out the observations.

In service mode, this implies providing all necessary instructions for setting up the telescope and instrument for your observations.

In visitor mode, this means preparing everything you need to have with you when at the observatory (e.g. instrument settings, foreseen exposure times, etc.) and setting up the travel logistics.

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HAVE FUN WITH THE DATA !!!